Ji-young MOON   Q77389
IMAGE WATERMARKING METHOD
USING HUMAN VISUAL SYSTEM
Filing Date: November 17, 2003
Darryl Mexic 202-293-7060
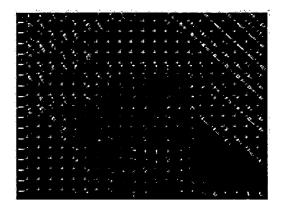1 OF 6

FIG. 1

INPUT VIDEO FRAME → GLOBAL MASKING MODELING → WATERMARK INSERTION → WATERMARKED VIDEO FRAME → WATERMARK EXTRACTION

FIG. 2A

FIG. 2B

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FIG. 3A

FIG. 3B

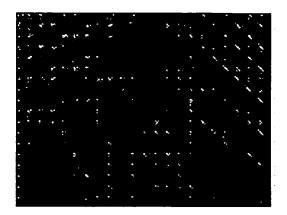
FIG. 4

FIG. 5A

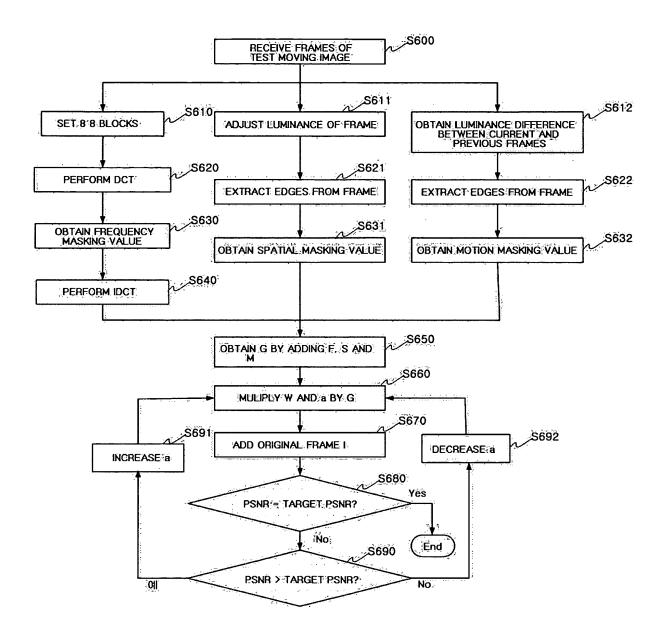**FIG. 5B**

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FIG. 6

RECEIVE FRAMES OF
TEST MOVING IMAGE — S600

SET 8·8 BLOCKS — S610

ADJUST LUMINANCE OF FRAME — S611

OBTAIN LUMINANCE DIFFERENCE
BETWEEN CURRENT AND
PREVIOUS FRAMES — S612

PERFORM DCT — S620

EXTRACT EDGES FROM FRAME — S621

EXTRACT EDGES FROM FRAME — S622

OBTAIN FREQUENCY
MASKING VALUE — S630

OBTAIN SPATIAL MASKING VALUE — S631

OBTAIN MOTION MASKING VALUE — S632

PERFORM IDCT — S640

OBTAIN G BY ADDING F, S AND
M — S650

MULIPLY W AND a BY G — S660

INCREASE a — S691

ADD ORIGINAL FRAME I — S670

DECREASE a — S692

PSNR = TARGET PSNR? — S680   Yes

No

End

PSNR > TARGET PSNR? — S690

0|

No

28
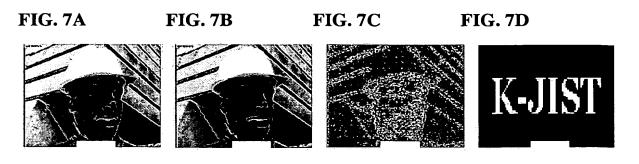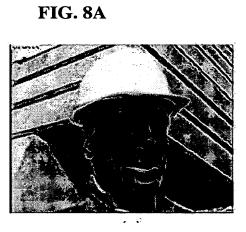
Ji-young MOON   Q77389
IMAGE WATERMARKING METHOD
USING HUMAN VISUAL SYSTEM
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FIG. 7A   **FIG. 7B**   **FIG. 7C**   **FIG. 7D**

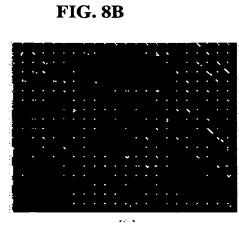**FIG. 8A**   **FIG. 8B**

FIG. 8C

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IMAGE WATERMARKING METHOD
USING HUMAN VISUAL SYSTEM
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FIG. 9A

FIG. 9B

FIG. 9C

FIG. 10A

FIG. 10B

FIG. 10C

FIG. 10D